

LISTING OF CLAIMS:

1-10. (Cancelled).

11. (Previously Presented) The ink cartridge of claim 36, further comprising:

at least one ink chamber for containing ink in said housing;

wherein the ink supply port is formed in the wall of said housing at an end of said ink chamber, said ink supply port having an inner opening and an outer opening;

a plurality of ink supply passages at least partly defining said ink supply port, each of said ink supply passage projecting inward said housing from a bottom wall of said housing, said ink supply passage communicating with a respective ink chamber at an inner end thereof, said ink supply passage comprising a recessed part formed at a top thereof and a projecting edge surrounding said recessed part, said ink supply passage further comprising at least one protrusion member formed on said recessed part isolated from said projecting edge and a filter disposed on said projecting edge and said protrusion member; and

at least one porous member impregnated with ink, and fitted in said ink chamber and engaging with said ink supply port through an associated said ink supply passage.

12. (Previously Presented) The ink cartridge of claim 11, wherein the height of said protrusion member is higher than that of said projecting edge when said filter is secured onto said projecting edge.

13. (Previously Presented) The ink cartridge of claim 11, wherein said protrusion member comprises two or more elongated protrusions.

14. (Previously Presented) The ink cartridge of claim 11, wherein said elongated protrusions extend toward said ink supply port which opens in said recessed part.

15. (Currently Amended) An ink cartridge for an ink jet printer, comprising:
a housing having walls and an opening, said housing containing ink, a top wall of said housing being constituted by a lid covering said opening of said housing;
at least one ink chamber defined by said housing and said lid;
an ink supply port formed on one of the walls of said housing;
at least one recess forming a space in an outer surface of said lid when the ink cartridge is packed under a vacuum condition, the pressure within said space being lower than the atmospheric pressure when the ink cartridge is packed; and
a seal member adhered to the outer surface of said lid,
wherein said recess ~~does not communicate with an interior of the ink cartridge,~~
~~and~~ is exposed to an exterior of the ink cartridge when the seal member is adhered to the outer surface of said lid and said recess is partially covered by said seal member adhered to the outer surface of said lid.

16. (Cancelled).

17. (Original) The ink cartridge of claim 16, wherein a portion of said seal member is removable, and said recess is disposed under the removable portion of said seal member.

18. (Original) The ink cartridge of claim 17, wherein said recess is disposed on a part of said lid which is spaced apart from said ink supply port.

19. (Original) The ink cartridge of claim 15, wherein the ink jet printer includes a carriage, the cartridge being mounted in the carriage and said recess is disposed on a part of said lid which is engageable with a member of the carriage when the ink cartridge is mounted on the carriage.

20. (Previously Presented) The ink cartridge of claim 19, wherein the ink jet printer further includes a mounting lever mounted on the carriage wherein the member of the carriage comprises a projection projecting from the mounting lever.

21. (Original) The ink cartridge of claim 16, wherein plural number of said recesses are formed in the outer surface of said lid.

22. (Original) The ink cartridge of claim 15, further comprising a fine, circuitous groove formed in one surface of said lid where said recess is formed.

23. (Original) The ink cartridge of claim 15, further comprising an air communication hole formed in said lid for communicating the interior of the ink cartridge with the atmospheric air, said air communication hole being disposed in the vicinity of said recess.

24-35. (Cancelled).

36. (Previously Presented) An ink cartridge for an ink jet printer, the ink jet printer having at least two projecting members and a recess, comprising:

- a housing having a wall and containing ink;
- a protrusion extending from the wall of the housing;
- an ink supply port formed in the protrusion at an offset position; and
- at least two engaging recesses formed in the wall of said housing adjacent to and apart from said ink supply port, each of said at least two engaging recess being respectively engageable with an associated one of said at least two projecting members of the printer when the ink cartridge is mounted on the printer, and the protrusion being received in the recess of the printer when the ink jet cartridge is mounted thereon,

wherein at least one of the engaging recesses and the projecting members of the printer aligns the ink supply port with an ink supply needle of the printer prior to the insertion of the ink needle into the ink supply port,

wherein during mounting of the ink cartridge on the printer, engagement between the at least two engaging recesses and the at least two projecting members and engagement between the protrusion and the recess begin prior to insertion of the ink supply needle into the ink supply port so as to complete both an alignment between the ink supply needle and the ink supply port and an alignment between the ink cartridge and the printer; and

wherein after both of the alignments are completed, the ink cartridge can be moved with respect to the printer in a direction parallel to an alignment axis of the ink supply port and the ink supply needle without a substantial movement of the ink cartridge with respect to the printer in a direction perpendicular to the alignment axis, to thereby insert the ink supply needle into the ink supply port.

37. (Previously Presented) The ink cartridge of claim 36, wherein the height of at least one of the projecting members is greater than that of the ink supply needle of the ink jet printer.

38. (Previously Presented) The ink cartridge of claim 37, further comprising an abutment member which abuts against at least one of the projecting members of the ink jet printer when the ink cartridge is mounted improperly.

39. (Previously Presented) The ink cartridge of claim 38, wherein said abutment member includes a part of said wall of said housing where at least one of the engaging recesses is not formed.

40-41. (Cancelled)

42. (Previously Presented) The ink cartridge of claim 36, wherein the cartridge has an odd number of said engaging recesses.

43. (Previously Presented) The ink cartridge of claim 36, wherein said ink cartridge has an even number of said engaging recesses.

44. (Previously Presented) The ink cartridge of claim 42, wherein the position of at least one said engaging recess is asymmetrical with respect to a center transversal line of said ink supply port.

45. (Previously Presented) The ink cartridge of claim 42, wherein at least two of the engaging recesses are disposed along a line.

46. (Previously Presented) The ink cartridge of claim 43, wherein at least two of the engaging recesses are disposed along a line.

47. (Previously Presented) The ink cartridge of claim 36, wherein at least one said engaging recess is rectangular in cross section.

48. (Previously Presented) The ink cartridge of claim 57, wherein a recessed port is formed on an outer surface of said lid, and said recessed port communicates with said air communication port and is isolated from said engaging recess.

49. (Previously Presented) The ink cartridge of claim 48, further comprising a porous member fitted in an ink chamber defined by said housing and said lid, said porous member being impregnated with ink and engaging with said ink supply port.

50. (Previously Presented) The ink cartridge of claim 57, wherein said film includes a seal member affixed to an outer surface of said lid, a portion of said seal member being removable.

51. (Previously Presented) The ink cartridge of claim 57, wherein said lid has a center line, and said engaging recess is disposed on the center line of said lid.

52. (Previously Presented) The ink cartridge of claim 57, wherein said engaging recess has capacity sufficient to receive gas escaped from the ink cartridge when the ink cartridge is packed in a package under a degassed condition.

53. (Previously Presented) The ink cartridge of claim 57, wherein the engaging recess engages with said projecting member from a carriage of the printer onto which the ink cartridge is mounted.

54. (Previously Presented) The ink cartridge of claim 57, wherein said engaging recess is completely covered by said film.

55. (Previously Presented) The ink cartridge of claim 53, wherein said cartridge includes a lever, said projecting member includes a projection formed on said lever.

56. (Previously Presented) The ink cartridge of claim 57, wherein said engaging recess comprising a first section for receiving the projecting member of the printer and a second section formed continuously with the first section.

57. (Previously Presented) An ink cartridge for an ink jet printer having a cartridge holder, comprising:

a housing having a wall and an opening,

a lid covering said opening of said housing;

an ink supply port formed on said wall of said housing; and

at least one engaging recess formed on said lid, said engaging recess being engageable with a projecting member of the printer when the ink cartridge is correctly mounted on the printer and said engaging recess being at least partially covered by a film which can be removed from the ink cartridge to create an air communication port to the atmosphere.

58. (Currently Amended) An ink jet printer, comprising:

a carriage;

a print head including a plurality of nozzles through which ink is ejected mounted on said carriage;

an ink cartridge, said ink cartridge being mounted on the carriage and, said ink cartridge comprising:

a housing having walls and an opening, a top wall of said housing being constituted by a lid covering said opening of said housing;

at least one ink chamber defined by said housing and said lid;

an ink supply port formed on one of the walls of said housing;

at least one recess forming a space in an outer surface of said lid, the pressure within said space being lower than the atmospheric pressure when the ink cartridge is packed;

a seal member adhered to the outer surface of said lid,

wherein the recess ~~does not communicate with an interior of the ink cartridge, and~~ is exposed to an exterior of the ink cartridge when the seal member is adhered to the outer surface of said lid, and said recess is partially covered by said seal member adhered to the outer surface of said lid.

59. (Cancelled).

60. (Previously Presented) The printer of claim 58, further comprising a mounting lever mounted on the carriage wherein a projection projecting from the mounting lever is engageable with said recess.

61. (Previously Presented) The printer of claim 59, wherein plural number of said recesses are formed in the outer surface of said lid.

62. (Previously Presented) An ink jet printer, comprising:

a carriage, said carriage having at least two projecting members, a recess, and an ink supply needle extending therefrom;

a print head including a plurality of nozzles through which ink is ejected mounted on said carriage;

an ink cartridge, said ink cartridge being mounted on the carriage and, said ink cartridge comprising:

a housing having at least one wall;

a protrusion extending from the wall of the housing;

an ink supply port formed in the protrusion at an offset position; and

at least two engaging recesses formed in the wall of said housing adjacent to said ink supply port, each of said at least two engaging recesses being respectively engageable with one of said at least two projecting members of the printer when the ink cartridge is mounted on the carriage, the protrusion being received in the recess of the printer when the ink jet cartridge is mounted thereon,

wherein at least one of the engaging recesses and the projecting members of the printer aligns the ink supply port with the ink supply needle prior to insertion of the ink needle into the ink supply port,

wherein during mounting of the ink cartridge on the printer, engagement between the at least two engaging recesses and the at least two projecting members and engagement between the protrusion and the recess begin prior to insertion of the ink supply needle into the ink supply port so as to complete both an alignment between the ink supply needle and the ink supply port and an alignment between the ink cartridge and the printer; and

wherein after both of the alignments are completed, the ink cartridge can be moved with respect to the printer in a direction parallel to an alignment axis of the ink supply port and the ink supply needle without a substantial movement of the ink cartridge with respect to the printer in a direction perpendicular to the alignment axis, to thereby insert the ink supply needle into the ink supply port.

63. (Previously Presented) The printer of claim 62, wherein the height of the at least one said projecting member is greater than that of the ink supply needle of the ink jet printer.

64. (Previously Presented) The printer of claim 63, further comprising an abutment member which abuts against at least one said projecting member of the ink jet printer when the ink cartridge is mounted in the improperly.

65. (Previously Presented) The printer of claim 64, wherein said abutment member includes a part of said wall of said housing where at least one said engaging recess is not formed.

66-67. (Cancelled)

68. (Previously Presented) The printer of claim 62, wherein the ink cartridge has an odd number of said engaging recesses.

69. (Previously Presented) The ink jet printer of claim 62, wherein said ink cartridge has an even number of said engaging recesses.

70. (Previously Presented) The ink jet printer of claim 68, wherein the position of at least one said engaging recess is asymmetrical with respect to a center transversal line of said ink supply port.

71. (Previously Presented) The ink jet printer of claim 68, wherein at least two of the engaging recesses are disposed along a line.

72. (Previously Presented) The printer of claim 69, wherein at least two of the engaging recesses are disposed along a line.

73. (Previously Presented) The printer of claim 62, wherein at least one said engaging recess is rectangular in cross section.

74-82. (Cancelled)

83. (Previously Presented) The ink cartridge of claim 42,
wherein the engaging recesses disposed along a same line are separate recesses.

84. (Previously Presented) The ink cartridge of claim 43, wherein the engaging recesses along the same line are formed by separate recesses.

85. (Previously Presented) The ink jet printer of claim 68, wherein the engaging recesses disposed along a same line are separate recesses.

86. (Previously Presented) The ink cartridge of claim 69, wherein the engaging recesses along the same line are formed by separate recesses.

87. (Previously Presented) An ink jet printer, comprising:
a carriage, said carriage having a projecting member extending therefrom;
a print head including a plurality of nozzles through which ink is ejected mounted on said carriage;

an ink cartridge, said ink cartridge being mounted on the carriage and, said ink cartridge comprising:

a housing having a wall and an opening,
a lid covering said opening of said housing;
an ink supply port formed on said wall of said housing; and
at least one engaging recess formed on said lid, said engaging recess being engageable with a projecting member of the printer when the ink cartridge is correctly mounted on the printer and said engaging recess being at least partially covered by a film which can be removed from the ink cartridge to create an air communication port to the atmosphere.

88. (Previously Presented) The ink jet printer of claim 87, wherein said engaging recess is engageable after said film is removed.

89. (Previously Presented) The ink jet printer of claim 87, further comprising a mounting lever mounted on the carriage wherein the member of the carriage comprises a projection projecting from the mounting lever.

90. (Previously Presented) The ink jet printer of claim 88, wherein plural number of said recesses are formed in the outer surface of said lid.

91. (Cancelled).

92. (Previously Presented) An ink jet printer, comprising:

a carriage having at least two projecting members, a recess, and an ink supply needle extending therefrom;

a print head mounted on said carriage and having a plurality of nozzles through which ink is ejected;

an ink cartridge mounted on the carriage, said ink cartridge comprising;

a housing having at least one wall,

a protrusion extending from the wall of the housing;

an ink supply port formed in the protrusion at an offset position, the ink supply needle being inserted into the ink supply port, and

at least two engaging recesses formed in the wall of said housing adjacent to said ink supply port, each of said at least two engaging recesses respectively receiving an associated

one of said at least two projecting members of the printer, the protrusion being received in the recess of the printer when the ink jet cartridge is mounted thereon,

wherein the engaging recesses and the projecting members of the printer align the ink supply port with the ink supply needle prior to insertion of the ink needle into the ink supply port,

wherein during mounting of the ink cartridge on the printer, engagement between the at least two engaging recesses and the at least two projecting members and engagement between the protrusion and the recess begin prior to insertion of the ink supply needle into the ink supply port so as to complete both an alignment between the ink supply needle and the ink supply port and an alignment between the ink cartridge and the printer; and

wherein after both of the alignments are completed, the ink cartridge can be moved with respect to the printer in a direction parallel to an alignment axis of the ink supply port and the ink supply needle without a substantial movement of the ink cartridge with respect to the printer in a direction perpendicular to the alignment axis, to thereby insert the ink supply needle into the ink supply port.

93. (Previously Presented) An ink jet printer as in claim 92, wherein the ink supply needle, at least one of the projecting members, and at least one of the engaging recesses are all dimensioned so that the ink supply needle does not contact the ink cartridge when the ink cartridge is placed on the carriage in an orientation such that the ink supply needle is not received in the ink supply port.

94. (Cancelled).

95.(Previously Presented) An ink cartridge for an ink jet printer including a carriage having at least two projecting members, a recess, and an ink supply needle extending therefrom, the ink cartridge being mountable on the carriage and comprising:

a housing having at least one wall,

a protrusion extending from the wall of the housing;

an ink supply port formed in the protrusion at an offset position, the ink supply needle being insertable into the ink supply port, and

at least two engaging recesses formed in the wall of said housing adjacent to said ink supply port, said engaging recesses respectively receiving said at least two projecting members of the printer, and the protrusion being received in the recess of the printer when the ink jet cartridge is mounted thereon,

wherein the engaging recesses and the projecting members of the printer align the ink supply port with the ink supply needle prior to insertion of the ink needle into the ink supply port,

wherein during mounting of the ink cartridge on the printer, engagement between the at least two engaging recesses and the at least two projecting members and engagement between the protrusion and the recess begin prior to insertion of the ink supply needle into the ink supply port so as to complete both an alignment between the ink supply needle and the ink supply port and an alignment between the ink cartridge and the printer; and

wherein after both of the alignments are completed, the ink cartridge can be moved with respect to the printer in a direction parallel to an alignment axis of the ink supply port and the ink supply needle without a substantial movement of the ink cartridge with respect

to the printer in a direction perpendicular to the alignment axis, to thereby insert the ink supply needle into the ink supply port.

96. (Previously Presented) The ink cartridge of claim 95, wherein the ink supply needle, at least one of the projecting members, and at least one of the engaging recesses are all dimensioned so that the ink supply needle does not contact the ink cartridge when the ink cartridge is placed on the carriage in an orientation such that the ink supply needle is not received in the ink supply port.

97. (Currently Amended) An ink cartridge for an ink jet printer, comprising:
an ink cartridge main body having an ink chamber communicating with an ink supply port; and

a lid covering an opening portion of the ink cartridge main body, and having an atmosphere communication port through which the ink chamber is communicateable with atmospheric air,

wherein a narrow groove, sealed by a film to define a capillary, is formed on a surface of the lid, one end of the narrow groove communicating with the atmosphere communication port, and the other end of the narrow groove communicating with an opening to be open to the atmospheric air, the narrow groove occupying only a portion of the surface of the lid, the outer surface of the lid having a portion where the narrow groove is not formed, and

wherein a recess for storing a negative pressure under vacuum is formed on the portion of the outer surface of the lid where the narrow groove is not formed, ~~the recess not communicating with the interior of the ink cartridge.~~

98. (Previously Presented) The ink cartridge of claim 97, wherein a plurality of the recesses for storing the negative pressure under vacuum are formed so as to mutually communicate with each other.

99. (Previously Presented) The ink cartridge of claim 97, wherein the recess is partitioned by protruding portions into a plurality of recesses arranged in a grid shape.

100. (Previously Presented) The ink cartridge of claim 99, wherein at least one of the protruding portions has a notch by which the recesses located opposite to the same ink chamber mutually communicates with each other.

101. (Previously Presented) The ink cartridge of claim 97, wherein the film is sized so as not to cover fully the recess.

102. (Cancelled).

103. (Previously Presented) The ink cartridge of claim 97, wherein a recess is formed in the edge of the lid and a portion of the film is received in the recess.

104-105. (Cancelled).

106. (Previously Presented) The ink cartridge of claim 97, wherein a rib is formed on a back surface of the lid opposite to the narrow groove.

107. (Previously Presented) The ink cartridge of claim 97, wherein a rib for pressing a porous member is formed on a back surface of the lid, and the narrow groove is opposite to the rib.

108. (Previously Presented) The ink cartridge of claim 97, wherein the narrow groove is defined by two protruding portions spaced from each other.

109. (Previously Presented) The ink cartridge of claim 108, wherein the film is adhered to surfaces of the two protruding portions to define the capillary for atmosphere communication.

110. (Previously Presented) The ink cartridge of claim 97, wherein the opening of each of the narrow grooves are enlarged toward an end portion thereof, and the plurality of the openings are arranged spreadingly in a fan shape.

111. (Previously Presented) The ink cartridge of claim 97, wherein the film includes a first film and a second film, the first film is adhered to cover the narrow groove to form the capillary and the second film is removably adhered across the first film.

112. (Previously Presented) The ink cartridge of claim 97, wherein the opening and the recess are covered by a film removably adhered to the lid.

113. (Previously Presented) The ink cartridge of claim 97, wherein the ink cartridge is packed by a packing member of an air impermeable film under a vacuum condition.

114. (Previously Presented) The ink cartridge of claim 36,
wherein the at least one wall is a bottom wall and the housing includes an
opening;
wherein the ink supply port is formed on the bottom wall; and
further comprising;
a lid,
a through hole formed in said lid and connecting the inside and outside of the ink
cartridge,
an air vent section formed on said lid which communicates with atmospheric air
when the ink cartridge is in use,
a circuitous channel formed in an outer surface of said lid and connecting said
through hole to said air vent section, said circuitous channel comprising a tunnel part which is a
hole formed in said lid,
a first seal member affixed to said lid over said through hole and one part of said
circuitous channel, and
a second, removable seal member affixed to said lid over said air vent section,
said second seal member being removed when the ink cartridge is in use.

115. (Previously Presented) The ink cartridge of claim 114, wherein said second
seal member is spaced apart from said first seal member for defining a non-sealed portion, and
said non-sealed portion of said lid is disposed over said tunnel part of said circuitous channel.

116. (Previously Presented) The ink cartridge of claim 114, further comprising a groove formed in an inner surface of said lid and connecting to said tunnel part of said circuitous channel.

117. (Previously Presented) The ink cartridge of claim 116, further comprising a third seal member affixed to the inner surface of said lid covering said groove.

118. (Previously Presented) The ink cartridge of claim 114, wherein said tunnel part of said circuitous channel is inclined to connect directly to said air vent section, and the depth of said tunnel part is shorter than the thickest part of said lid.

119. (Previously Presented) The ink cartridge of claim 114, further comprising ribs formed on the inner surface of said lid at portions thereof corresponding to said circuitous channel.

120. (Previously Presented) The ink cartridge of claim 114, further comprising a plurality of ink chambers for containing different inks therein, said ink chambers being formed within said housing, and a plurality of said circuitous channels and said through holes a respective circuitous route and through hole corresponding to a respective one of said ink chambers.

121. (Previously Presented) The ink cartridge of claim 120, wherein the ink cartridge comprises three ink chambers, three circuitous channels and one air vent section connecting to all the three circuitous channels.

122. (Previously Presented) The ink cartridge of claim 120, wherein the ink cartridge comprises five ink chambers, five circuitous channels and two air vent sections connecting to at least two of said five circuitous channels.

123. (Previously Presented) The ink cartridge of claim 114, further comprising a porous member fitted within an ink chamber defined by said housing and said lid, said porous member being impregnated with ink.

124. (Previously Presented) The ink cartridge of claim 114, further comprising a recess formed in the outer surface of said lid, and said air vent section being formed within said recess.

125. (Previously Presented) The ink cartridge of claim 124, wherein an opening of said air vent section is formed in a side wall of said recess.

126. (Previously Presented) The ink cartridge of claim 57, wherein a second engaging recess is formed on an outer surface of said lid.

127. (Previously Presented) The ink cartridge of claim 57, further comprising a seal member affixed to an outer surface of said lid, a portion of said seal member being removable.

128. (Previously Presented) The ink cartridge of claim 57, wherein said lid has a center line, and said engaging recess is disposed at a position which deviates from the center line of said lid.

129. (Previously Presented) The ink cartridge of claim 57, wherein the engaging recess engages with a rod projecting from a carriage of the printer onto which the ink cartridge is mounted.

130. (Previously Presented) The ink cartridge of claim 57, wherein said engaging recess is covered by a removable seal.

131. (Previously Presented) The ink cartridge of claim 57, wherein said cartridge holder includes a lever, said engaging recess engaging with a projection formed on a lever of a cartridge holder of the ink jet printer.

132. (Previously Presented) The ink cartridge of claim 57, wherein said engaging recess comprising a first section for receiving the projection of the lever and a second section for receiving the member of the printer, and said first section and said second section being formed continuously.

133. (Previously Presented) The ink cartridge of claim 129, wherein an inner surface of said ink supply port is entirely angled.

134-135. (Cancelled).